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**REMARKS**

This response is intended as a full and complete response to the non-final Office Action mailed January 24, 2005. In the non-final Office Action, the Examiner noted that claims 1-18 are pending in the application and that claims 1-18 stand rejected.

By this response, Applicants have amended claims 1-2, 4-13, and 15-16 and cancelled claims 3, 14, and 17-18.

In view of both the amendments presented above and the following discussion, Applicants submit that none of the claims now pending in the application are anticipated or obvious under the respective provisions of 35 U.S.C. §102 and 103.

It is to be understood that Applicants, by amending the claims, do not acquiesce to the Examiner's characterizations of the art of record or to Applicants' subject matter recited in the pending claims. Further, Applicants are not acquiescing to the Examiner's statements as to the applicability of the art of record to the pending claims by filing the instant responsive amendments.

**REJECTIONS**

**A. 35 U.S.C. §102**

**Claims 1-3, 7-10 and 14-18**

The Examiner has rejected claims 1-3, 7-10, and 14-18 under 35 U.S.C. §102(b) as being anticipated by Suzuki et al. (U.S. Patent 6,005,702, hereinafter "Suzuki"). In response, Applicants have amended claims 1-2, 7-10, and 15-16 to more clearly recite aspects of the invention. Claims 3, 14, and 17-18 have been cancelled without prejudice.

Independent claim 1 (and similarly independent claims 2 and 16), as amended, recites limitations not taught, shown or suggested by Suzuki.

Suzuki teaches an optical transmission system ("device") using a chirped return-to-zero (CRZ) on/off keying (OOK) modulation format. A channel transmitter includes an electro-absorption modulator 23, an intensity modulator 25, and a phase modulator 27 (33) or a frequency modulator 29 and the modulators 23 and 25 (FIGS. 2, 3, and 6). Digital data signals are superposed onto return-to-zero (RZ) optical pulses by applying to these pulses a phase or frequency modulation, which is in synchronization with a

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transmission rate, to generate pseudo-random optical signals (col. 1, line 66 - col. 2, line 5; col. 2, lines 10-19; and col. 4, lines 5-15).

However, Suzuki does not teach, show or suggest an optical communication system where a transmitter includes (a) a means for modulating an optical carrier in a sequence of return-to-zero (RZ) pulses and (b) a modulator for modulating an optical phase of the RZ pulses to form an optical phase modulated signal, as recited in amended claims 1, 2, and 16.

Support for the amendment can be found in the Specification at page 4, last paragraph - page 5, first paragraph.

More specifically, in Applicants' invention recited in claims 1, 2, and 16, transmitted information (i.e., digital data) is contained in an optical phase of the RZ pulses modulated using phase shift keying (PSK), differential DPSK, or quadrature (QPSK) modulated formats.

The Examiner's attention is directed to the fact that, in contrast with Applicants' invention, in the Suzuki's CRZ OOK modulation format, an optical phase of an optical carrier does not contain any information. As such, Suzuki fails to teach Applicants' invention recited in claims 1, 2, and 16.

"Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim" (Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984) (citing Connell v. Sears, Roebuck & Co., 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)) (emphasis added). The Suzuki reference fails to disclose each and every element of the claimed invention, as arranged in the claims 1, 2, or 16.

As such, Applicants submit that claims 1, 2, and 16 are not anticipated by Suzuki and fully satisfy the requirements of 35 U.S.C. §102 and are patentable thereunder.

Furthermore, claims 7-10, 14 and 15 depend, either directly or indirectly, from independent claims 1 and 2 and recite additional features thereof. As such and at least for the same reasons as discussed above, Applicants submit that these dependent claims are also not anticipated and fully satisfy the requirements of 35 U.S.C. §102 and are patentable thereunder.

Therefore, Applicants respectfully request the rejection be withdrawn.

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**B. 35 U.S.C. §103(a)**

**Claim 6**

The Examiner has rejected claim 6 as being unpatentable over Suzuki in view of Tzukerman et al. (U.S. Patent No. 6,724,829, hereinafter "Tzukerman"). In response, Applicants have amended claim 2, from which claim 6 depends, and amended claim 6 to more clearly recite aspects of the invention.

Independent claim 2, as amended, recites limitations not taught, shown or suggested by a combination of Suzuki and Tzukerman. The patentability of claim 2 over Suzuki has been discussed above in Section A.

Tzukerman teaches a cable TV network using a QPSK or k-QAM type of modulation (col. 2, lines 14-17 and lines 32-35). However, Tzukerman does not teach a means for modulating an optical carrier in a sequence of return-to-zero (RZ) pulses and (b) a modulator for modulating an optical phase of the RZ pulses to form an optical phase modulated signal, as recited in amended claim 2. As such, Tzukerman does not teach Applicants' invention.

The teachings of Tzukerman are not applicable to optical communication system and, as such, there is no suggestion or motivation to combine the teachings of Suzuki and Tzukerman. Furthermore, Tzukerman cannot be utilized to modify the system described by Suzuki in a manner that would result in the optical communication system recited in claim 2.

As such, Suzuki and Tzukerman, alone or in a combination, would not produce Applicants' invention recited in claim 2.

Therefore, Applicants submit that independent claim 2 is not obvious and fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder over a combination Suzuki and Tzukerman.

Furthermore, claim 6 depends directly from independent claim 2, and recites additional features thereof. As such, and for at least the reasons discussed above, Applicants submit that claim 6 also fully satisfies the requirements under 35 U.S.C. §103 and is patentable thereunder over a combination Suzuki and Tzukerman.

Therefore, Applicants respectfully request the rejection be withdrawn.

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**C. 35 U.S.C. §103(a)****Claim 11**

The Examiner has rejected claim 6 as being unpatentable over Suzuki in view of Fukuchi et al. (U.S. Patent No. 5,745,613, hereinafter "Fukuchi"). In response, Applicants have amended claim 2 from which claim 11 depends, and amended claim 11 to more clearly recite aspects of the invention.

Independent claim 2, as amended, recites limitations not taught, shown or suggested by a combination of Suzuki and Fukuchi. The patentability of claim 2 over Suzuki has been discussed above in Section A.

Fukuchi teaches a WDM system ("apparatus") where a transmission channel includes a LiNbO<sub>3</sub> modulator. However, Fukuchi does not teach a means for modulating an optical carrier in a sequence of return-to-zero (RZ) pulses and (b) a modulator for modulating an optical phase of the RZ pulses to form an optical phase modulated signal, as recited in amended claim 2. As such, Fukuchi does not teach Applicants' invention.

Furthermore, Fukuchi cannot be utilized to modify the system described by Suzuki in a manner that would result in the optical communication system recited in claim 2.

As such, Suzuki and Fukuchi, alone or in a combination, would not produce Applicants' invention recited in claim 2.

The test under 35 U.S.C. §103 is not whether an improvement or a use set forth in a patent would have been obvious or non-obvious; rather the test is whether the claimed invention, considered as a whole, would have been obvious. Jones v. Hardy, 110 USPQ 1021, 1024 (Fed. Cir. 1984) (emphasis added). Thus, it is impermissible to focus either on the "gist" or "core" of the invention, Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc., 230 USPQ 416, 420 (Fed. Cir. 1986) (emphasis added). Moreover, the invention as a whole is not restricted to the specific subject matter claimed, but also embraces its properties and the problem it solves. In re Wright, 6 USPQ 2d 1959, 1961 (Fed. Cir. 1988) (emphasis added). Suzuki and Fukuchi, alone or in combination, fail to teach or suggest Applicants' invention recited in claim 2 as a whole.

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As such, Applicants submit that independent claim 2 is not obvious and fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder over a combination of Suzuki and Fukuchi.

Furthermore, claim 11 depends directly from independent claim 2, and recites additional features thereof. As such, and for at least the reasons discussed above, Applicants submit that claim 11 also fully satisfies the requirements under 35 U.S.C. §103 and is patentable thereunder over a combination of Suzuki and Fukuchi.

Therefore, Applicants respectfully request the rejection be withdrawn.

**D. 35 U.S.C. §103(a)**

**Claims 4, 5, 12 and 13**

The Examiner has rejected claims 4, 5, 12 and 13 as being unpatentable over Suzuki in view of Smith (U.S. Patent No. 4,847,477, hereinafter "Smith"). In response, Applicants have amended claim 2 from which claims 4, 5, 12 and 13 depend, and amended claims 4, 5, 12 and 13 to more clearly recite aspects of the invention.

Independent claim 2, as amended, recites limitations not taught, shown or suggested by a combination of Suzuki and Smith. The patentability of claim 2 over Suzuki has been discussed above in Section A.

Smith teaches a method and apparatus reducing laser beam fluctuations for use in optical communication employing PSK and DPSK modulation schemes (Abstract; col. 1, lines 5-15). However, Smith does not teach an optical communication system where a transmitter, includes (a) a means for modulating an optical carrier in a sequence of return-to-zero (RZ) pulses and (b) a modulator for modulating an optical phase of the RZ pulses to form an optical phase modulated signal, as recited in amended claim 2. As such, Smith does not teach Applicants' invention.

Furthermore, Smith cannot be utilized to modify the system described by Suzuki in a manner that would result in the optical communication system recited in claim 2. As such, Suzuki and Smith, alone or in a combination, would not produce Applicants' invention recited in claim 2.

Therefore, the Suzuki and Smith, alone or in combination fail to teach or suggest Applicants' invention as a whole. Moreover, in Applicants' opinion, utilization of the

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teachings of Smith (e.g., balancing latencies of optical paths T1, and T2) is not feasible in a high bit rate optical communication system.

As such, Applicants submit that independent claim 2 is not obvious and fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder over a combination of Suzuki and Smith.

Furthermore, claims 4, 5, 12 and 13 depend directly from independent claim 2, and recite additional features thereof. As such, and for at least the reasons discussed above, Applicants submit that claims 4, 5, 12 and 13 also fully satisfy the requirements under 35 U.S.C. §103 and are patentable thereunder over a combination of Suzuki and Smith.

Therefore, Applicants respectfully request the rejection be withdrawn.

#### SECONDARY REFERENCES

The secondary references made of record are noted. However, it is believed that the secondary references are no more pertinent to Applicants' disclosure than the primary references cited in the Office Action. Therefore, Applicants believe that a detailed discussion of the secondary references is not necessary for a full and complete response to this office action.

#### CONCLUSION

Thus, Applicants submit that all claims now pending are in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, it is requested that the Examiner telephone Eamon J. Wall at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

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Respectfully submitted,

5/24/05

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